A METHOD AND SYSTEM FOR DELIVERY OF PRODUCTS WITHIN A PREDETERMINED TIME PERIOD

Field of the Invention

This invention relates to a method and system for delivering products and in particular to a method and system for ensuring the delivery of products or other items to a designated destination within a predetermined time period using alternative suppliers and shipping entities.

Background of the Invention

The cornerstone of free enterprise is the purchase of goods and services. In many transactions the buyer and the seller are in different locations. This situation often times requires the seller/merchant to ship the goods to the buyer. In another case, a manufacturer produces a product that has to be transported to the distributors for sale to the public. In addition to the shipping requirements of products needed in the business world, many businesses have a need to ship packages (not necessarily products) that contain all sorts of information to other businesses or customers. Although shipping of products or other items is necessary for most businesses, shipping does have some disadvantages.

Historically, businesses have had the necessary task of delivering parcels (i.e., goods and/or documents) to their customers. The need for keeping records of when and to whom the parcels were delivered necessitated the generation of paper documents to record each transaction. Large commercial enterprises such as retail chains, and even large governmental functions such as mail delivery (i.e., C.O.D., parcel post, or return receipt mail) can generate amounts of paper, which are difficult and expensive to handle both in labor and storage costs.

More recently, third party parcel delivery firms have developed which provide delivery services on a global scale for millions of parcels daily. This requires the generation of large amounts of paperwork for tracking each parcel as it moves through the sender's organization, to each of the various components of the third party delivery

firm, such as receiving station, sending location trucking department, freighter or aircraft shipping, receiving location trucking, and finally to the customer whose signature must be obtained, returned, and stored for proof of delivery.

Parcel tracking has been addressed in some areas, particularly in the area of parcel identification, by the development of bar codes and bar code scanners that allow identification of goods by machine. Bar code scanners are old and well known in the art. This approach is used in inventory checking systems, retail sales terminals, etc. However, while scanning systems provide an improved ability to identify appropriately marked goods, they do not address the problem of obtaining signature records to prove receipt of goods. Thus, the problems related to paper handling and storage remain, due to the requirement for signature records.

In addition to the administrative load, delivery service quality has become almost as important to many customers as the quality of supplied goods. More and more, customers tend to make purchasing decisions based upon service performance of suppliers. Thus, it has become very important for suppliers to evaluate their own service performance and to provide the results of such evaluations to customers. Suppliers and their customers often cooperate to evaluate service performance.

On-time product delivery is an important service component of many high-volume supply businesses. A customer typically orders a product for delivery on a specified date. The customer expects that the delivery will be no later than that date. However, the customer also does not want the delivery to be too early. The customer considers the delivery to be on time only if it is within an on-time window.

One current method for delivery of products such as flowers, is to have a network of stores or merchants located at various geographic locations. When there is an order for flowers, a determination is made as to which merchant will fill the order. If the initial merchant, the one receiving the order from the customer can meet the delivery requirements of the customer, that merchant usually handles the order. However, if the delivery site was in a different region, a merchant in that region could be contacted to fill the order. Because the contacted merchant is local to the customer, the order could be filled within the time requirements of the customer. However, the drawback is that this system is effective when there is a network of merchants.

With the explosion in use of the Internet, more and more items are bought and sold over the Internet. Global computer networks such as the Internet offer the great ability to bridge the distance between the supplier and the buyer bringing the world community together. The Internet also offers unique opportunities to develop new fail over mechanisms while conducting business. In addition, associated with the use of the Internet are substantially increased numbers of persons requiring delivery of purchased products. Some of these products have preferred delivery dates because of special events or occasions. Other items have delivery dates because the products are perishable. Most delivery systems today focus on the tracking of the items to ensure that the items do not get lost. However, these devices do not focus on the assurance that the delivery will be at the designated destination at the predetermined time. There remains a need for a method and system that can assure the delivery of a product with the requirements of the customer purchasing the product.

Summary of the Invention

It is an objective of the present invention to provide a delivery system that ensures the delivery of a product or item to a designated destination within a predetermined time period.

It is a second objective of the present invention to provide a method and system that tracks the progress of a delivery and determine whether that delivery will reach the designated destination within a predetermined time period.

It is a third objective of the present to provide a delivery method that ensures product delivery through an alternate supplier source, in the event there is a determination that the initial shipment of the product will not reach the destination within the predetermined time period.

The present invention is a product delivery method and system that can be implemented over a communication network. The system of the present invention comprises a program that processes product purchase and shipping information, a tracker to monitor the product delivery, a switchover mechanism, a database to store delivery progress information and a communication interface. It is possible that resources that performs the tasks of each server can be located in one server. The system of the invention also has a business database and a shipping and handling database. Customers and suppliers can communicate with each other and access the databases via a global communication network such as the Internet.

The present invention describes a delivery method and system that enables a delivery of a product to a destination within the time period specified by the entity responsible for ordering the delivery. This invention involves the use of an initial supplier of an item and an alternate supplier of the ordered product. The alternate supplier is preferably located in the proximity of the destination location. During the delivery process, the progress of the shipment is tracked and periodic determinations are made, based on the shipment progress, whether the shipment will be delivered at the predetermined time. If during the delivery process, there is a determination that the shipment will not reach the designated destination at the predetermined time, a substitute order will be placed with an alternate supplier to be delivered to the destination. Since,

this alternate supplier is in close proximity to the destination location, this supplier should be able to deliver the order within the specified time period.

The initial implementation of the invention would be similar to any other current delivery procedure. For example, a typical ordering scheme is an integrated system such as a flower delivery system. The delivery of the orders can be tracked using package/shipment-tracking numbers. Most sites currently allow this or it can be made a condition to get the shipping business. If it appears that the delivery cannot be made in time, the system of the present invention performs a switchover to a local channel of delivery. It procures the item from a local supplier, but probably at a higher price. In this case, the customer may even get two shipments. It is important that the delivery gets to the destination in the specified time period. This onetime delivery maintains the shipping and selling entity's goodwill, which is especially important in a situation where people's emotions and feelings are involved.

Description of the Drawings

Figure 1 depicts data processing equipment a system that can be utilized to implement the present invention;

Figure 2 is a diagram of a computer network over which delivery and shipping information may be transmitted between suppliers, shipping and handling entities and clients;

Figure 3 is a flow diagram of the delivery method of the present invention.

Figure 4 is a more detailed flow diagram of the method of the present invention.

Figure 5 is a structural diagram of the business server of the present invention.

Figure 6 is a structural diagram of the components in the system of the present invention.

Detailed Description of the Invention

With reference now to Figure 1, there is depicted a pictorial representation of data processing system **10** which may be used in implementation of the present invention. As may be seen, data processing system **10** includes processor **11** that preferably includes a graphics processor, memory device and central processor (not shown). Coupled to processor **11** is video display **12** which may be implemented utilizing either a color or monochromatic monitor, in a manner well known in the art. Also coupled to processor **11** is keyboard **13**. Keyboard **13** preferably comprises a standard computer keyboard, which is coupled to the processor by means of cable **14**. Also coupled to processor **11** is a graphical pointing device, such as mouse **15**. Mouse **15** is coupled to processor **11**, in a manner well known in the art, via cable **16**. As is shown, mouse **15** may include left button **17**, and right button **18**, each of which may be depressed, or "clicked", to provide command and control signals to data processing system **10**. While the disclosed embodiment of the present invention utilizes a mouse, those skilled in the art will appreciate that any graphical pointing device such as a light pen or touch sensitive screen may be utilized to implement the method and apparatus of the present invention. Upon reference to the foregoing, those skilled in the art will appreciate that data processing system **10** may be implemented utilizing a personal computer.

The method of the present invention may be implemented in a global computer network environment such as the Internet. With reference now Figure 2, there is depicted a pictorial representation of a distributed computer network environment **20** in which one may implement the method and system of the present invention. As may be seen, distributed data processing system **20** may include a plurality of networks, such as Local Area Networks (LAN) **21** and **22**, each of which preferably includes a plurality of individual computers **23** and **24**, respectively. Of course, those skilled in the art will appreciate that a plurality of Intelligent Work Stations (IWS) coupled to a host processor may be utilized for each such network. Any of the processing systems may also be connected to the Internet as shown. As is common in such data processing systems, each individual computer may be coupled to a storage device **25** and/or a printer/output device **26**. One or more such storage devices **25** may be utilized, in accordance with the

method of the present invention, to store the various data objects or documents which may be periodically accessed and processed by a user within distributed data processing system **20**, in accordance with the method and system of the present invention. In a manner well known in the prior art, each such data processing procedure or document may be stored within a storage device **25** which is associated with a Resource Manager or Library Service, which is responsible for maintaining and updating all resource objects associated therewith.

Still referring to Fig. 2, it may be seen that distributed data processing system **20** may also include multiple mainframe computers, such as mainframe computer **27**, which may be preferably coupled to Local Area Network (LAN) **21** by means of communications link **28**. Mainframe computer **27** may also be coupled to a storage device **29** which may serve as remote storage for Local Area Network (LAN) **21**. A second Local Area Network (LAN) **22** may be coupled to Local Area Network (LAN) **21** via communications controller **31** and communications link **32** to a gateway server **33**. Gateway server **33** is preferably an individual computer or Intelligent Work Station (IWS) which serves to link Local Area Network (LAN) **22** to Local Area Network (LAN) **21**. As discussed above with respect to Local Area Network (LAN) **22** and Local Area Network (LAN) **21**, a plurality of data processing procedures or documents may be stored within storage device **29** and controlled by mainframe computer **27**, as Resource Manager or Library Service for the data processing procedures and documents thus stored. Of course, those skilled in the art will appreciate that mainframe computer **27** may be located a great geographical distance from Local Area Network (LAN) **21** and similarly Local Area Network (LAN) **21** may be located a substantial distance from Local Area Network (LAN) **24**. That is, Local Area Network (LAN) **24** may be located in California while Local Area Network (LAN) **21** may be located within Texas and mainframe computer **27** may be located in New York.

Referring to Figure 3, there is a description of the overall method of this invention. As shown in step **35**, a client places an order with a business for a product. The client will provide, as part of the order, the requirements for the purchase and delivery of the product. This information will include the identity of the product, the quantity of the product, the product delivery destination and the delivery time. The

delivery time could be a specific time or a specified time period. The business receives and processes this information in step **36**. This business entity can be an actual supplier of the ordered product or a business that coordinates the purchase and delivery of products. As part of the processing function, the business will locate a supplier of the ordered product, if that business does not have or supply the actual goods. The business schedules the order with the supplier. The business will also select the shipping and handling entity to deliver the product. Lastly, the business will calculate prices and fees and charge the client for the purchase and delivery of the product. Once this business entity has compiled the information concerning this transaction, the information is stored in a business database. As part of this transaction between the client and the business, there can be an agreement containing all of the terms and conditions of the transaction.

After processing the purchase order, the selected shipping and handling entity assembles and ships the order to the designated destination. The shipping and handling entity (S&H) will design a shipping route for the delivery. Once shipping has begun, the next step **37** is to track the progress of the shipment geographically along the shipping route. The shipping route can contain geographic checkpoints and a time schedule of the delivery. Each checkpoint will have a time associated with it.

The method uses these checkpoints, in step **38**, to track the progress of the delivery and the make a determination whether the delivery is on schedule at the particular checkpoint. If the determination is that the delivery is on schedule, the product delivery proceeds as planned. If after all checkpoints, the product delivery is on schedule, the product is delivered **39** to the designated destination. At this point, the S&H entity receives compensation for the performed delivery services **40**. If the determination in step **38** is that the delivery is behind schedule and that the delivery will not reach the designated destination within the required time period, then an alternate supplier of the shipped product is contacted to perform an emergency delivery **41**. This alternate supplier should preferably be located in close proximity to the delivery destination. This supplier will receive the client requirements for purchase and delivery of the product received by the business in step **35**. The supplier will assemble the product order and use an S&H entity to make the delivery for the client instead of the original order. This alternate delivery will ensure that the product arrives at the

destination within the specified time period. The alternate supplier will receive compensation for cost of the order and delivery services **42**. The alternate supplier will probably also receive a fee for agreeing to perform the delivery service as an alternate supplier.

At this point, the product order has been delivered to the designated destination in time. However, the original order is still in route to the delivery destination. This order is still tracked to determine when it will reach the delivery destination **43**. This arrival determination step **43** is periodically repeated, in step **44**, until the order arrives at the destination. When the order does arrive at the destination location, there is a determination on the final delivery of this original order **45**. The can be at least four delivery alternatives for this order. The first alternative can be to deliver the product to the original destination as planned. This delivery would result in the client receiving two orders of the product. Depending on the circumstances, the client may accept both orders. The next alternative can be to deliver the order to the alternate supplier. The alternate supplier could use this order to replace the delivered product in its inventory. Inventory swapping between suppliers of the same product are not unusual in many industries. A third alternative is to send the product back to the original supplier. This alternative may be viable depending on the willingness of the supplier to accept the product. It will also depend on the terms of the purchase and the delivery. If the delivery delay was solely the responsibility of the S&H entity, there may some compensation due to the original supplier in order for the supplier to accept the original order. The fourth alternative would be to deliver the product to a second client in the proximity of the first delivery destination. For example, if second client made a request for a similar order to the alternate supplier shortly after the alternate supplier agreed to fill the order for the original customer, this first product order could fill the second product order for the alternate supplier. The final solution to this delivery and any penalties resulting from the failure to deliver the original order in a timely manner should be covered by terms in the original purchasing agreement **46**.

Figure 4 gives a detailed illustration of the activities involved in the product delivery-tracking process in Figure 3. As shown in step **47**, the supplier receives the order from the customer. The supplier does the product processing, assembles the order

and supplies the order to an S&H entity **48**. The S&H entity records the exchange/handover of the order from the supplier in an S&H database **49**. This database is generally located in a server at some computing network location or at the S&H entity facility. The original business, receiving the order from the client, is informed of the S&H transaction. The business stores that information in a business database and uses it for tracking the product during delivery **50**. The delivery route is determined either jointly by the S&H, the supplier and the business taking into consideration the delivery requirements of the client or by any combination jointly or singularly by the three entities.

As previously mentioned, the shipping route can contain geographic checkpoints and a time schedule of the delivery. Each checkpoint will have a time associated with it. The shipping route will also contain information about the shipping means at each handover checkpoint. For example, this delivery route may have five checkpoints. This route will also have three shipment modes, railroad car, ship and truck. Checkpoints one and two may not involve a change in shipping mode. In this case, at some geographic point, only a time check will occur to determine whether the delivery is on schedule. Checkpoint three may be a transfer from the railcar to a ship. Checkpoint four will be the exchange from the ship to a truck. Checkpoint five would be only a geographic check to determine a status of the delivery. All of this delivery information will be stored in the business database and S&H database.

The delivery schedule will also contain a critical point at which the delivery must be on schedule or there will be decision to implement an alternate delivery plan. At each checkpoint, the time of the checkpoint/handover will be marked **51** and stored in the tracking database **52**. During the periodic status checks, there will an examination of the time to determine if the time has passed this critical point **53**. If the time has not passed the critical point, the delivery process returns to and repeats step **51**. However, if the delivery time has passed the critical point, there is determination whether the delivery can meet the delivery requirement based on the current delivery circumstances **54**. These circumstances include the current location of the order along the delivery route at the critical point. If the determination is that the delivery can reach the destination within the delivery requirements, there is determination whether the delivery has reached the

destination **55**. If the delivery has not reached the destination, the process returns to step **51**. The continual evaluation of the delivery process is necessary until the order reaches the delivery destination. If the delivery has reached the final destination, the product is delivered to the client **56** and the parties to the delivery are compensated **57** in accordance with the terms of the purchase and shipping agreement.

Referring to step **54**, if it does not appear that the delivery will be within the time requirements of the client, then an alternate delivery process is implemented **58** and the supplier of the shipped product is contacted to perform an emergency delivery **59** as is done in step **41** of Figure 3. As shown, when step **54** determines that the deliver will not meet the deadline, the process moves step **55a** where there is determination whether the delivery has reached the destination. At this point, this decision step primarily relates to the original shipment. Even though an alternate shipment has been ordered and shipped to the destination site, one alternative is to still deliver the original shipment to the destination. Step **55a** will periodically repeat its inquiry until the original shipment arrives and is delivered in accordance with steps **56** and **57**.

Figure 5 shows a structural diagram of a business server **60**. This server can contain all of the functional features of the present invention. As shown, the server has a section **61** that contains information for a specific order. This section contains client information **62** which can include general client identity information client such as name, address and telephone number. Box **63** contains information about the particular order. This information includes the previously discussed requirements for purchase and delivery of the product. Box **64** contains the billing information for the particular transaction. Boxes **65**, **66**, **67**, and **68** respectively contain information about the specific product supplier, backup supplier, shipping and handling entity and the emergency S&H entity for a particular delivery.

The business server **60** also contains general information that is used in the implementation of the present invention during the delivery of a product. Box **69** contains the switchover policies that determine at what point to implement a delivery of the product from an alternate supplier. Box **70** describes the actual techniques that implement the product delivery switchover. As previously mentioned after shipment, each individual product order is tracked using techniques contained in box **71**. The

product database **72** can contain all of the product orders from the shipping business that are currently in route to a client destination. Also contained in the business server is supplier information in the form of a supplier database **73** of suppliers of a product and an alternate/emergency supplier database **74**. The alternate supplier database contains information such as supplier names, areas covered by each supplier, the minimum time required to implement an emergency delivery switchover (alternate delivery) and the cost of such a delivery. The server also has databases for primary **75** and alternative **76** shipping and handling information. Similar to the supplier and alternate supplier databases, the primary S&H database contains information about shipping companies in close proximity to the client. The alternate database **76** contains information about shipping companies in other geographic locations where the client may do business. A specialized shipping and handling entity (probably more expensive) would handle an emergency switchover. Each shipping and handling entity could serve a specified area in case of the need for an emergency switchover.

Figure 6 shows an example of the different communication connections for the various entities in the system of the present invention. This illustration is for the case where the various components and functions of the invention are physically in different geographic locations. As shown many of the communications occur via a global communication network **77** such as the Internet. A client seeking to have a product shipped to a destination can communicate with various entities in order to achieve the desired objective. As shown, some of these communications can be directly with the particular entity or via the communication network. In the example in Figure 6, a client in one location can order a product to be shipped from a second location to a destination location. The client **78** can contact a product supplier **79** via network **77** to order the shipment of a product to a desired destination. The supplier can contact a shipping and handling entity through the shipping and handling server **80**. Tracking of the delivery can be as previously described using a tracking server **81**. When needed alternative product suppliers and shipping and handling entities can be found through the databases and contacted via the communication network **77** for emergency delivery of a substitute product order.

It is important to note that while the present invention has been described in the context of a fully functioning data processing system, those skilled in the art will appreciate that the processes of the present invention are capable of being distributed in the form of instructions in a computer readable medium and a variety of other forms, regardless of the particular type of medium used to carry out the distribution. Examples of computer readable media include media such as EPROM, ROM, tape, paper, floppy disc, hard disk drive, RAM, and CD-ROMs and transmission-type of media, such as digital and analog communications links.

Having thus described the invention, what we claim as new and desire to secure by Letters Patent is set forth in the following claims.